

CLAIMS

[0048] What is claimed is:

1. A device comprising:
a contact switch comprising:
a bottom electrode structure including a bottom actuation electrode; and
a top electrode structure including a top actuation electrode and one or more stoppers able to maintain a predetermined gap between said top electrode and said bottom electrode when said switch is in a collapsed state.
2. The device of claim 1, wherein at least one of said stoppers is able to contact said bottom electrode when said switch is in said collapsed state.
3. The device of claim 1, wherein said bottom electrode structure comprises one or more electrically isolated islands, wherein at least one of said stoppers is able to contact at least one of said islands when said switch is in said collapsed state.
4. The device of claim 1 comprising a support beam associated with said top electrode and having a generally low spring constant.
5. The device of claim 1, wherein said top electrode is generally rigid.
6. The device of claim 1, wherein said switch comprises a first electrical contact able to be electrically connected with a second electrical contact when said switch is in a closed state.
7. The device of claim 6, wherein said first electrical contact is positioned on a contact beam associated with said top electrode.
8. The device of claim 7, wherein a spring constant of said contact beam is bigger than a spring constant of a support beam associated with said top electrode.
9. The device of claim 6, wherein said first electrical contact is positioned at a desired location on said top electrode.
10. The device of claim 9, wherein said desired location is determined based on an opening time period of said switch.
11. A system comprising:
a switching arrangement including at least one contact switch comprising:
a bottom electrode structure including a bottom actuation electrode; and

- a top electrode structure including a top actuation electrode and one or more stoppers able to maintain a predetermined gap between said top electrode and said bottom electrode when said switch is in a collapsed state; and
a switch controller able to control operation of said at least one contact switch.
12. The system of claim 11, wherein at least one of said stoppers is able to contact said bottom electrode when said switch is in said collapsed state.
 13. The system of claim 11, wherein said bottom electrode structure comprises one or more electrically isolated islands, wherein at least one of said stoppers is able to contact at least one of said islands when said switch is in said collapsed state.
 14. The system of claim 11, wherein said switch comprises a support beam associated with said top electrode and having a generally low spring constant.
 15. The system of claim 11, wherein said switch comprises a first electrical contact able to be electrically connected with a second electrical contact when said switch is in a closed state.
 16. The system of claim 15, wherein said first electrical contact is positioned on a contact beam associated with said top electrode.
 17. A device comprising:
a contact switch comprising top and bottom electrode structures, said switch is able to be switched to a collapsed closed state wherein a first electrical contact associated with said top structure is in contact with a second electrical contact associated with said bottom structure, wherein said top structure is in contact with said bottom structure, and wherein a predetermined gap is maintained between other portions of said top and bottom structures.
 18. The device of claim 17, wherein said top electrode structure comprises a top actuation electrode and one or more stoppers.
 19. The device of claim 17, wherein said bottom electrode structure comprises a bottom actuation electrode and one or more electrically isolated islands.
 20. The device of claim 17, wherein a contact force of at least 100 micro-Newtons is maintained between said first and second electrical contacts in response to an actuation voltage of less than 40 Volts between said top and bottom structures.
 21. A wireless device comprising:
an antenna; and

a switching arrangement comprising first and second contact switches, said first switch able to connect said antenna with a transmitter, and said second switch able to connect said antenna with a receiver,

wherein at least one of said contact switches is a collapsible switch comprising:

a bottom electrode structure including a bottom actuation electrode; and

a top electrode structure including a top actuation electrode and one or more stoppers able to maintain a predetermined gap between said top electrode and said bottom electrode when said collapsible switch is in a collapsed state.

22. The wireless device of claim 21, wherein at least one of said stoppers is able to contact said bottom electrode when said collapsible switch is in said collapsed state.
23. The wireless device of claim 21, wherein said bottom electrode structure comprises one or more electrically isolated islands, wherein at least one of said stoppers is able to contact at least one of said islands when said collapsible switch is in said collapsed state.
24. The wireless device of claim 21, wherein said collapsible switch comprises a support beam associated with said top electrode and having a generally low spring constant.
25. The wireless device of claim 21, wherein said collapsible switch comprises a first electrical contact able to be electrically connected with a second electrical contact when said switch is in a closed state.